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Blood Bank Management System

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Abstract:- The Ultimate goal of the Blood Bank Management System is to simplify the procedure of blood donation and allowance at blood bank. In the fast-paced modern era, there exists a necessity for a well-established and sturdy platform where benefactors and medical professionals can connect for the purpose of blood donation, ensuring that those in need can receive the necessary blood in a timely manner, it becomes easier for many a man who desires to donate blood but cannot locate a appropriate structure for it due to their hectic schedule. The Blood Bank Management System (BBMS) is software that preserves, handles, fetches, and scrutinizes information regarding a blood repository. With the use of Blood Bank Management System, blood transfer procedure is safe and protected. Threats on improper blood donor documentation, or misguided records could be completed eliminated.

***Keywords*:-** *Blood Bank Management System, Blood Donation, Blood Group,Donor, Recipient.*

I. INTRODUCTION

The Blood Bank Management System is a online-based solution designed to manage skillfully, organize inventory, administrative, and all aspects within a blood bank. The application allows for the registration of blood donors.Users can record and store physical and medical details of donors during registration. These details can be updated as needed during successive donations. The system also examines eligibility criteria for donations, helping in finding referred donors for future reference. The application offers tools to well organize the blood bank's inventory, including blood bags and blood components. Users can request blood and blood transfusions through the application Cross-matching techniques are used to ensure adaptability, and results are generated and scrutinized by experts before issuing the blood. System also enables generation of numerous reports related to blood requests and cross-matching. These reports permit for measuring performance parameters within the blood bank, analyzing inventory, and evaluating various aspects of blood bank operations. In summary, the Blood Bank Management System is a extensive solution that modernizes management of donor data, inventory, blood requisition, and cross- matching while maintaining a secure environment and facilitating in-depth reporting for skillful and effective blood bank operations.

II. RELATED WORK

Every year, the nation faces a significant blood shortage, needing approximately 4 crore units of blood, while only 40 lakh units are typically available. Inspite of presence of several blood banks worldwide, there is often no direct connection between donors and recipients. Blood donation can involve giving whole blood or particular blood components, and in developed countries, most donors are unpaid volunteers contributing to a communal blood supply. Donors may also select to store their blood for future personal use. In today's technologically competent world, web-based applications have become an essential component of our daily lives. Technological advancements have introduced various features to this field. The objective of this web application is to facilitate the easy location of nearby blood donors during emergencies. Users who register on this platform provide their location, contact information, blood type, and other related details.The application serves for both individuals seeking blood donors and those willing to donate, ensuring timely assistance [1].

As a management information system, Pah Essah and Said Ab Rahman (2011) deployed a blood bank management system that revolves around details concerning the recipient, the donor and the blood. It is designed to

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oversee the administration of the system. Their system comprises three key modules: the donor module, the patient module, and the blood module. However, one crucial issue is left that who should be responsible for administrating the system [4].

In "Automated Online Blood Bank Database" authored by Muhammad Arif, S. Sreevas, K. Nafseer, and R. Rahul (2012), they introduced a direct call routing method employing asterisk. In this approach, each blood bank is equipped with a database dealt by a central server. In times of urgent need for blood, individuals can dial the toll-free number provided. This call will be directly routed to a suitable donor, and upon receiving blood from that donor, the donor's information is temporarily held for 2 months. [2][8]

E.M.S.S.Ekanayaka and C.Wimaldharma (2015) deployed a Blood Bank Management System it could gather whole donors in a centralized platform. The system ensures continuous communication with donors by sending SMS notifications to phone numbers, keeping them informed[4].

In the paper "Short message service (SMS) based blood bank" by G. Muddu Krishna & S. Nagaraju(2016) and suggested a system in which the amenities of a blood bank would be reached through SMS.If anyone needs blood they must request it by SMS, so packet count module of their system can verify the accessibility of blood, with a response provided by the data processing module [3].

An Application related to "Life saving" developed by Ramakant Gawande; Narendra Gupta; Nikhil Thengadi they introduced a system which connects all donors and linking all contributors and aiding in the regulation of the blood transfer mechanism, and the system can also manage a database containing information about donors and blood categorized by city and subsequently by locality [11].

According to Gupta N, Gawande R, Thengadi N ,blood donation and transfusion is a critical problem and need, scarcity of blood whole over the globe leads to demise of many a man. The deficiency of centralized system of donation of blood is extremely accountable for all the losses. In the generation of online ,computerized procedures, standard techniques of gathering blood are certain. There is a need for an automated system to control centers, to present the details to the fascinated parties. They deployed a website it can handles all those problems linked to donation of blood and receiving of blood. They developed SQLite database as essential component of united framework which organizes previous blood contribution information in a centralized database for systematic processing. Suggested system allow individuals so that they can register as a donor to make themselves accessible when there is a requirement of their type of blood. They launched a seek tab to find accessible persons to contribute the blood. In the suggested system in registration of donor, haleness-concerned information can be updated in database of blood bank management system [6][10].

According to Catassi, there is a digitalized inventory control system for managing distribution of blood among the hospitals, blood bank.System is being performed from 1964, it stood out blood effectiveness usage of preceding processes. Certainly, applicable processed data of daily status of blood by a centralized system causes to a 60 percent depletion at obsolete in conjunction by supply depletion of average 30 percent. Combining the suggested system into ongoing clinic and blood bank management evaluated in regard to workforce, mental, and financial repercussions [5].

In perspective of Clemen Teena, in spite of the growing need for blood, merely around 5% of the Indian populace contributes blood. This information encompass details like the contributor's name, blood group, and email. Subsequently, contact details will be presented on the screen. In case of an urgency need for blood, one can promptly locate a contact individual who corresponds to a particular or related blood type and reach them through the blood bank website. Blood Bank Management System offers a roster of contributors in your city/region. Utilize this application whenever need arises.

Almost everyone possesses a mobile phone or telecall smartphone with him/her, it guarantees on the spontaneous monitoring and communication. website will aid users in easily finding donors with compatible blood groups in their vicinity and accessing their mobile numbers for prompt assistance. Machine learning is employed to showcase the most frequently contributed blood corporations the usage of SVM [7][14].

III. PROPOSED METHODOLOGY

Unlike the current blood bank management systems, the proposed system should be developed for utilization of various individuals by ensuring security of data and privacy of distinct blood banks while simultaneously providing a degree of accessibility for others information like donors and recipients information.

Blood Bank Management System has 3 modules followed by Donor, Patient (Receiver), Admin.

Donor has ability to view, accept request and patient can be able to make a request and admin can have overall control.

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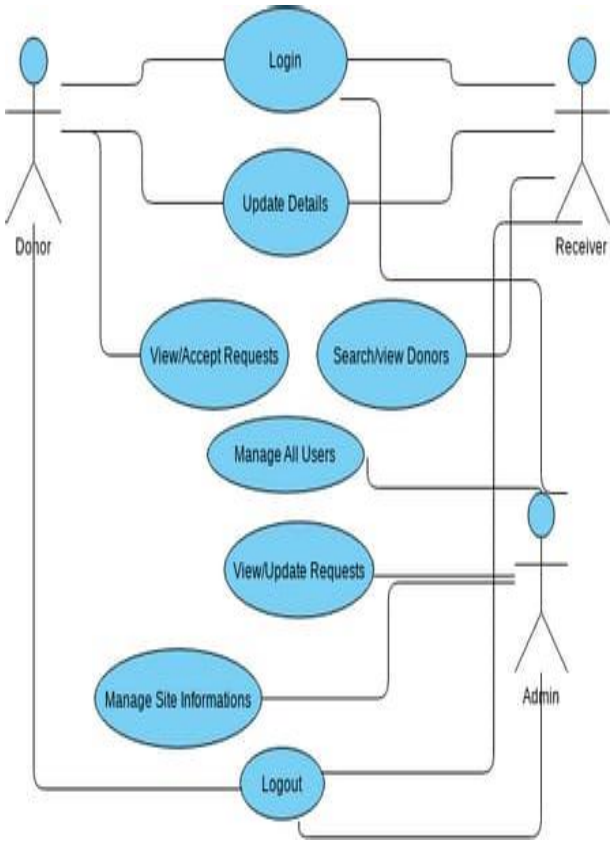

Fig 1 Blood Bank Management System

The proposed system has developed to be "deployed once and use anywhere" as opposed to some researches that suggest management activities to be implemented on standalone systems.

It could be deployed on individual computers.

All System functionalities will be accessible over the internet based on the user accessing the system.

IV. ALGORITHM

The basic functionalities are represented using a pseudo code, which is as follows:

```
# Create empty data structures to store donor and inventory information
donor_data = []
inventory_data = []
# Function to add a new donor
def add_donor():
    donor_info = {
        "DonorID": generate_unique_donor_id(),
        "Name": input("Enter donor's name: "),
        "BloodType": input("Enter donor's blood type: "),
        "DonationDate": input("Enter donation date: "),
        "ContactInformation": input("Enter contact information: ")
    }
    donor_data.append(donor_info)
    print("Donor information added successfully.")

# Function to add blood inventory
def add_blood_inventory():
    inventory_info = {
        "BloodProductID": generate_unique_product_id(),
        "BloodType": input("Enter blood type: "),
        "ExpiryDate": input("Enter expiry date: "),
        "AvailableUnits": int(input("Enter available units: "))
    }
    inventory_data.append(inventory_info)
    print("Blood inventory added successfully.")

# Function to generate a unique donor ID
def generate_unique_donor_id():
    return len(donor_data) + 1

# Function to generate a unique product ID for blood inventory
def generate_unique_product_id():
    return len(inventory_data) + 1
```

V. RESULTS AND DISCUSSION

Homepage will appear like this.

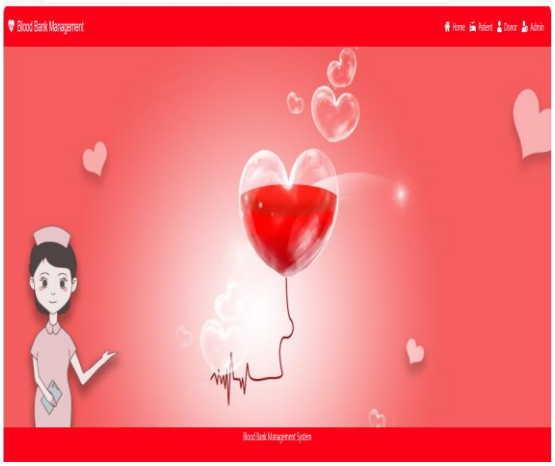

Fig 2 HOME PAGE

By clicking on the home page we can find 3 icons at top right corner of the page namely patient, donor, admin. On clicking on patient icon, new Patient can register, by creating username, password and giving details like blood group, disease, mobile number, profile pic and his address.

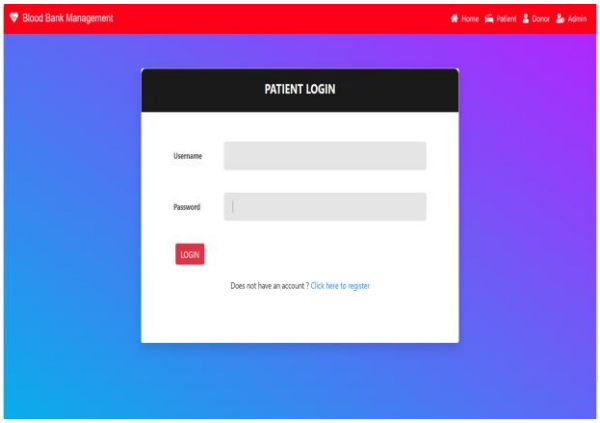

Fig 3 PATIENT LOGIN PAGE

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Registered patient can login by giving user name and password and system will verify the patient by his user name and password and can allow or deny access to the patient.

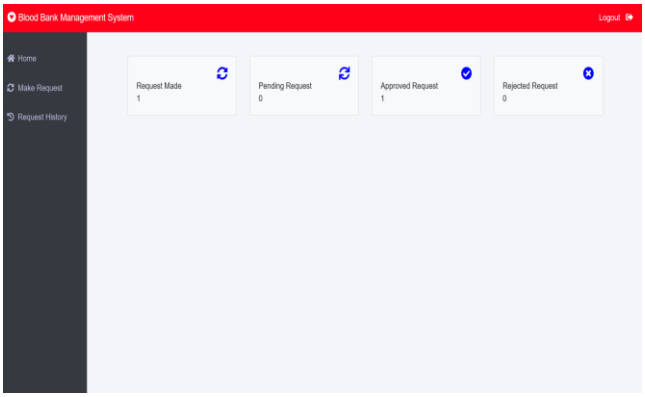

Fig 4 *PATIENT DASHBOARD*

A Patient could have access to make blood request for particular blood group and amount of blood in units from available blood stock.

Patient can view their made blood request history with status (Pending, Approved, Rejected.)

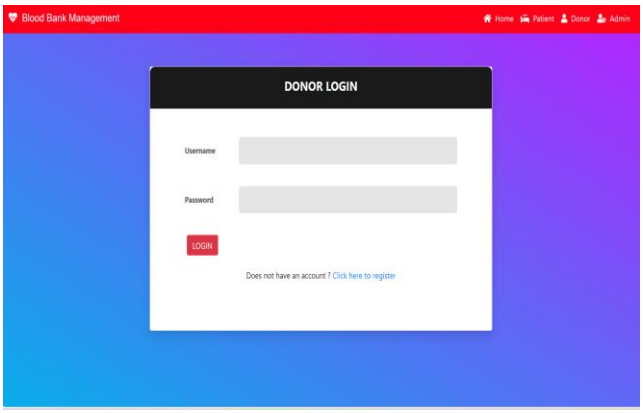

Fig 5 DONOR LOGIN PAGE

New donor can register by clicking on donor icon by creating username, password, giving details like blood group, mobile number, profile pic and his address.

After registering donor can login using donor login page by giving his username and password.

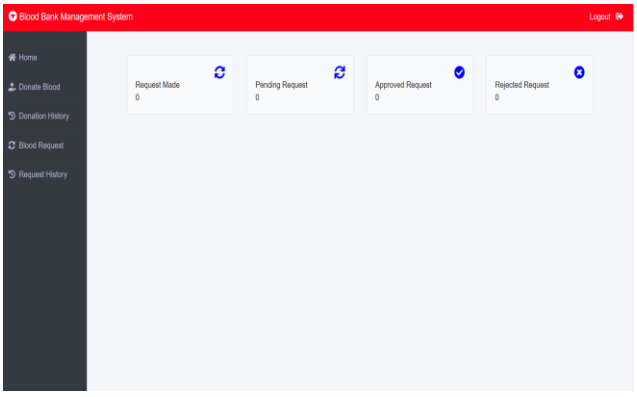

Fig 6 DONOR DASHBOARD

Donor has a capability for not only to donate blood but can also to make a blood request.

Donor could view count of made blood requests, history (Approved, Pending, Rejected.) by Admin on his dashboard.

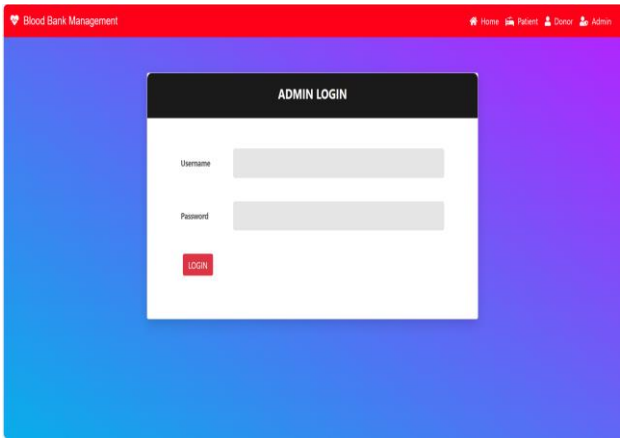

Fig 7 *ADMIN LOGIN PAGE*

An admin could manage whole activities. Admin can login by giving created user name followed by password in admin login page by clicking on admin icon.

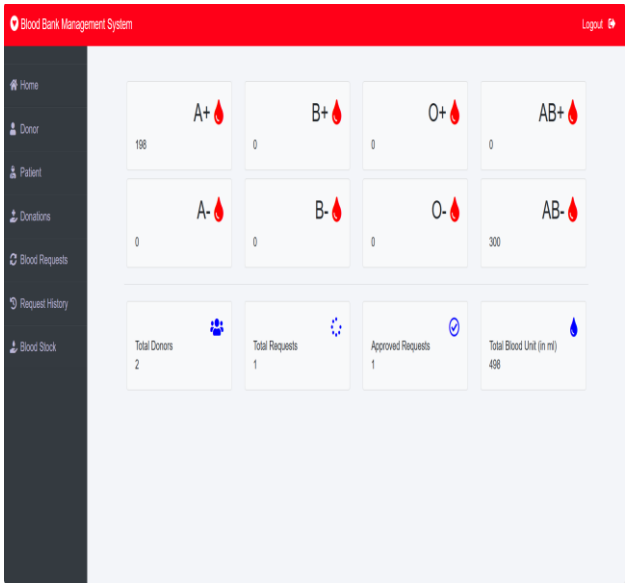

Fig 8 ADMIN DASHBOARD

Admin could view blood units of each and every accessible blood group, count of donors, count of blood requests made, count of approved requests, total units of blood available on Dashboard. The following are the functionalities of admin:

Admin Could see, update, delete donor details and patient details.

Could see donation requests made by donor and admin can reject or approve the request on basis of whether a donor has any disease or not.

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Admin Could view blood request history. Could update count of units of a specific blood group.

VI. FUTURE SCOPE - CONCLUSION

Presently we developed an efficient Blood Bank Management System. Trends related to blood repository in past years have changed and is still changing. Many researches were done on the management of blood banks. The use of IoT will become beneficially for the management system and in future donor can get information about blood donation camp through SMS and email along with building an aware community. Streamlining the management process ensures a more efficient and prompt response in critical situations. In conclusion online blood bank management system is un complicated resolution to the process which aims to eliminate the problems and make smooth transfer of blood.

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